

# Pulp & Paper

QUALITY VALVE PRODUCTS

DESIGNED SPECIFICALLY FOR THE

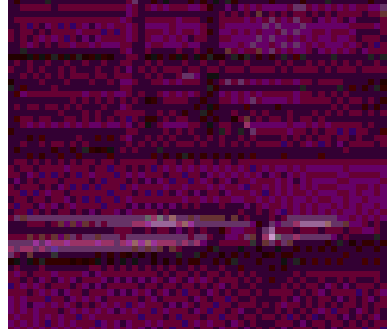
PULP AND PAPER INDUSTRY.

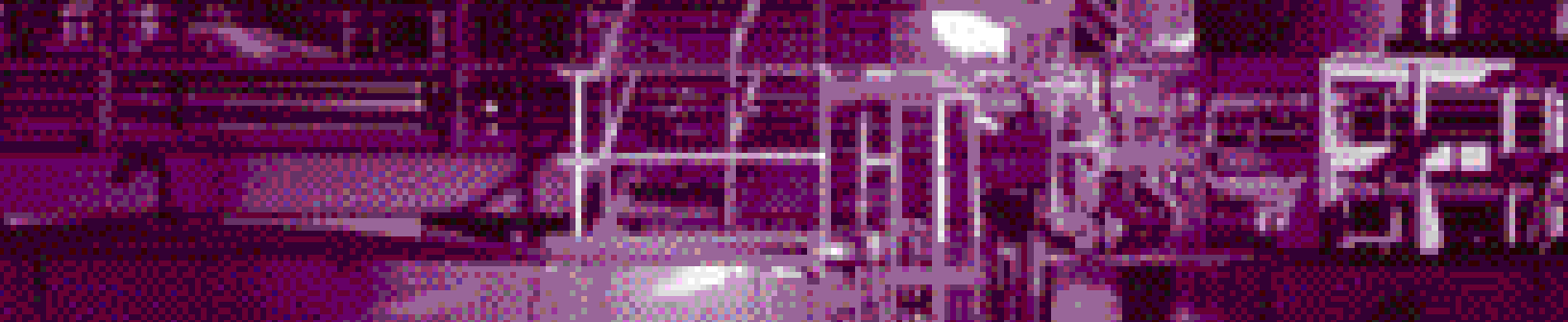


**ITT Industries**  
*Engineered for life*

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**Y**ou know what you need – The right valve for the job. The right strength and durability properties. The right pressure ratings. And the special alloys when, and only when, they are required to provide needed performance advantages. The right strength to weight ratios. The right delivery schedules.

For more than half a century, ITT Industries Engineered Valves Group has been a proven supplier of quality valve products designed specifically for the pulp and paper industry. Year after year, we've designed and engineered products and features uniquely adapted to pulp and paper processing.

Engineered Valves Group offers proven, time-tested solutions for your special requirements. By refining both testing and application, we continue to solve countless problems associated with pulping, bleaching, dewatering, recovery, papermaking, and recycling. Our exclusive valves are designed to provide extra-long life in an industry where life expectancy of equipment is exceedingly low. Our valves substantially reduce downtime and maintenance costs and consistently outlive their payback period.

Engineered Valves Group does much more than simply engineer products. Over the years, we've developed a wide range of in-house resources – 100% testing capabilities, surface smoothness measurement, nuclear alloy analysis, dye penetrant testing, finite element analysis, and comparative measurement – all aimed at assuring the quality and integrity of our valves.

Our dedication to “breaking the mold” has resulted in industry-transforming products like “Energized Packing” to improve seal performance and reduce adjustments. We brought you reinforced vinylester lined knife gate valves, our patented C67 perimeter seated valve, our C133GL for difficult recovery applications, and the one piece cast body, flanges, and chest of the Fabri-Valve C37.

We've virtually pioneered fabricated valve construction, enabling us to hold lead times and costs to a minimum, even when supplying exceptionally large, or highly customized valves.

At Engineered Valves Group, we are dedicated to giving you what you need – the right valve, with the right properties, the right ratings, the right materials, and the right response to those all important on – time delivery schedules.

We know that our success depends on your success, and for more than 50 years our dedication to giving you what you need has been the cornerstone of that achievement.

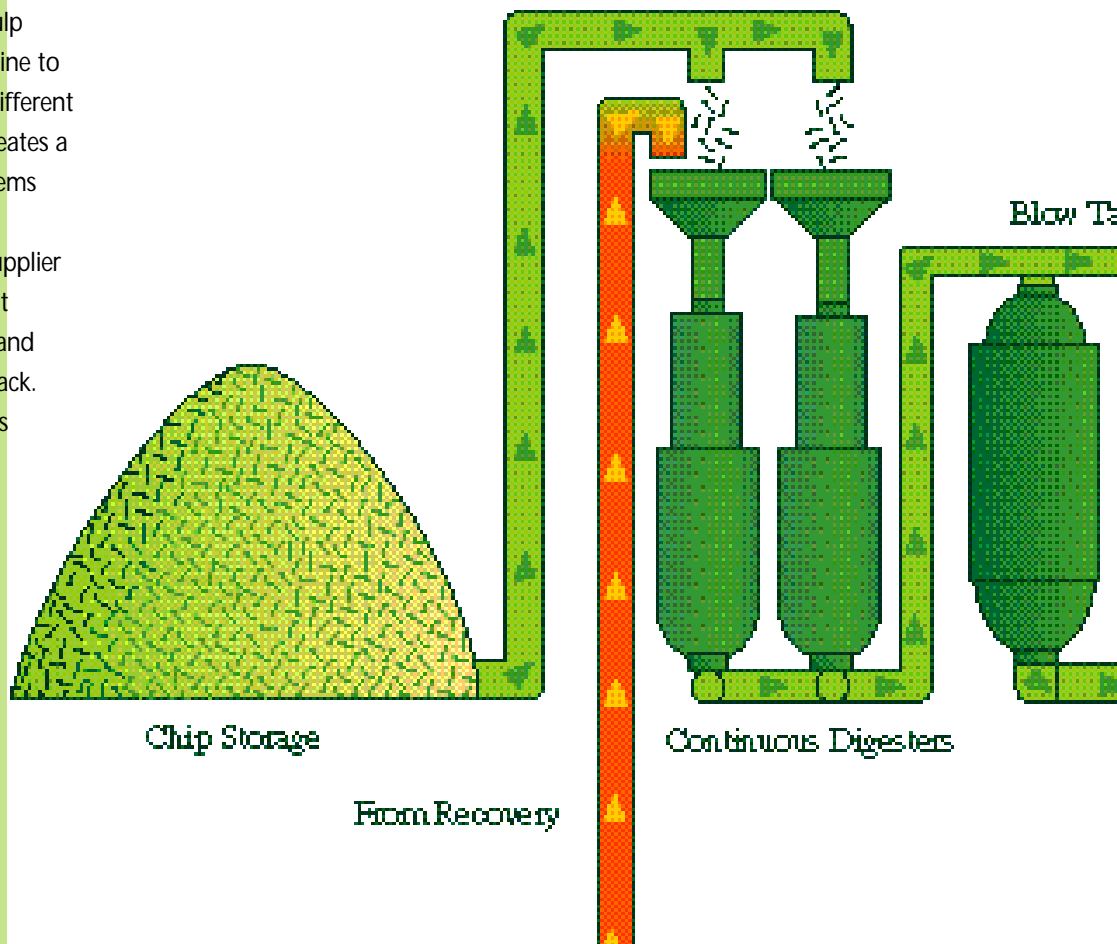
The customer is the lifeblood of our company.

ITT Industries Engineered Valves Group – We make it right.

# Pulping



For more than 50 years, Engineered Valves has been manufacturing valves designed specifically for pulp mill application. We know that processes for producing pulp stock almost always varies from machine to machine and mill to mill. And those different processes for producing pulp stock creates a wide variety of valve needs and problems inherent to the process. We've built a reputation on being a cutting edge supplier of valves capable of handling thick hot slurries that have a tendency to pack and de-water in any available crevice or crack. Our experience with these applications shows in our line of problem-solving valves for pulp mill service.



## Fabri-Valve C37 Knife Gate Valve

Applications: stock lines, equipment and pump isolation, and filtrate

The Fabri-Valve C37 is the work-horse of the pulp mill. This valve meets or exceeds the MSS and TAPPI standards for knife gate valves. Plus, the open seat area on the C37 allows for use in higher consistency stock where other manufacturer's knife gate valves fall short.

- Metal, D-Ring, or replaceable seat options
- All stainless steel or stainless body with carbon/ductile topworks
- Backing rings for reverse flow applications

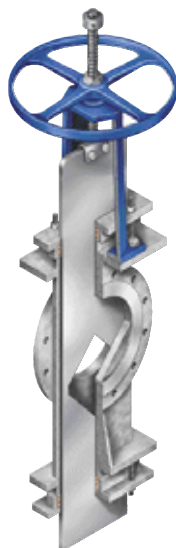


## Fabri-Valve F39

Applications: blow tank outlet, knotters, high density storage, and tower isolation

Offering assured shut-off and throttling in abrasive and/or high solids slurry service, the F39 is designed specifically to provide dependable operation even in a static column of solids.

- Optional flush and cleanout ports allow wash out of hardened debris
- Replaceable seats for positive shut-off
- Diamond port for throttling



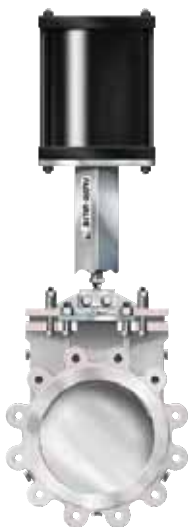
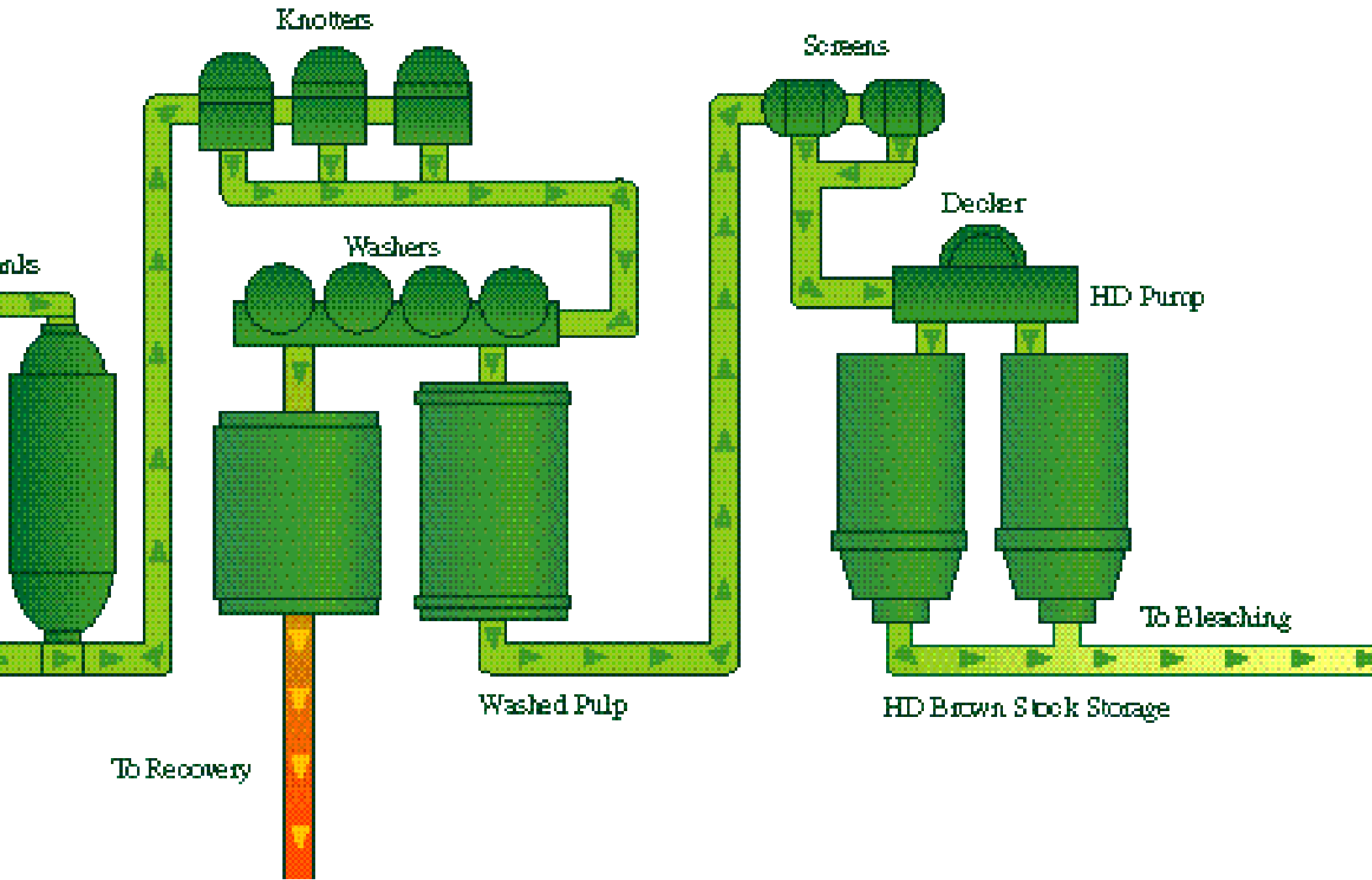
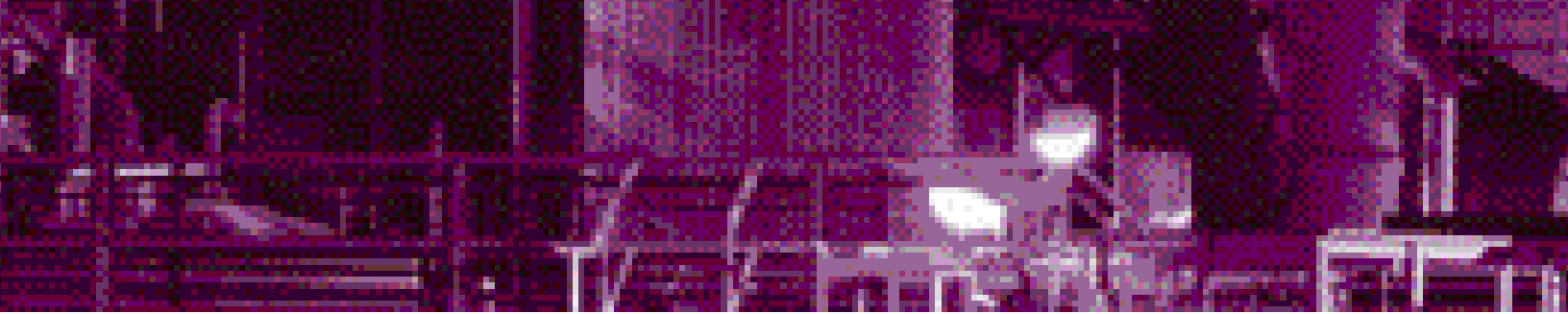
## Fabri-Valve C67 Bi-directional Knife Gate Valve

Applications: Stock lines, high density stock, black liquor, filtrate, pump and equipment isolation

The C67 unique, patented perimeter seal provides bi-directional shutoff to reduce seal compression, eliminate leakage, seat pullout, galling and chest clogging common in unidirectional metal seated knife gate valves.

- Design eliminates grooves that collect material and prevent proper closing
- Bi-directional design prevents problems which occur when other valves are installed backward.

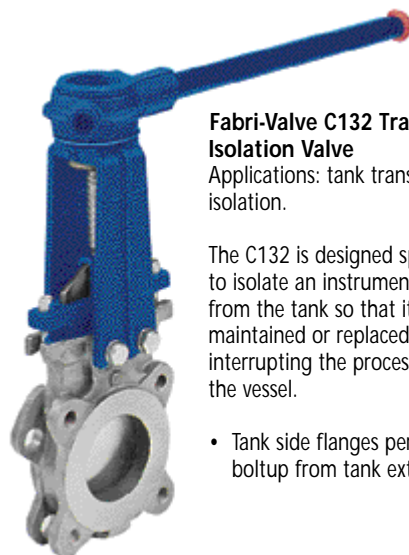




**Fabri-Valve C42 Reject Valve**  
Applications: Knotters, rejects, and screens

The C42 offers long wearing, hardened materials on the critical seat and gate surfaces for extended performance on reject dumping applications. Built to withstand wire, nails, fencing, and other difficult solids.

- Stellite overlay face and bore, easily replaceable seat
- Hard alloy gate
- Flush ports standard
- Over sized cylinders

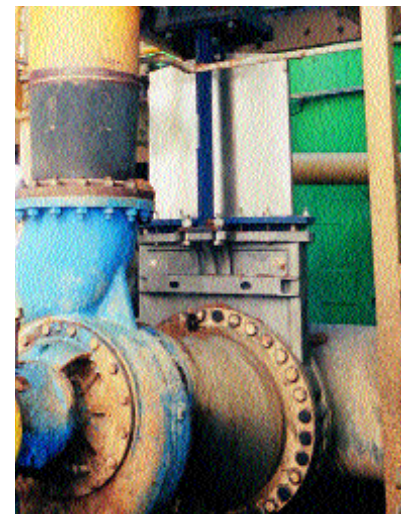


**Fabri-Valve C132 Transmitter Isolation Valve**

Applications: tank transmitter isolation.

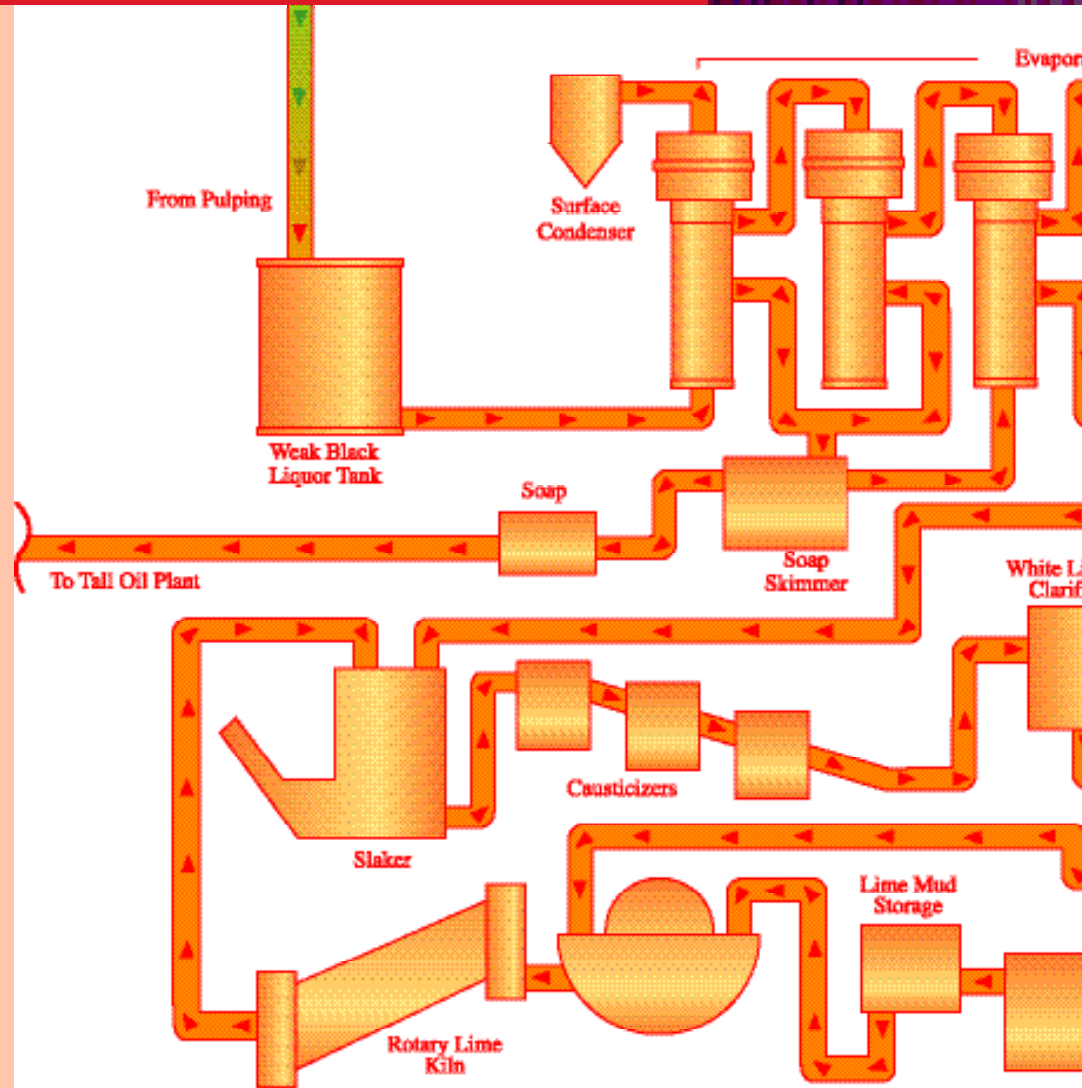
The C132 is designed specifically to isolate an instrument transmitter from the tank so that it may be maintained or replaced without interrupting the process or draining the vessel.

- Tank side flanges permit blind boltup from tank exterior



# Recovery

In a kraft pulp mill, the chemical recovery area poses significant valve challenges. Corrosion, abrasion, scaling, and dewatered solids all combine to create formidable valve challenges. Recovery applications can range from high concentrations of solids in black liquor evaporators, to precipitated calcium scale in green and white liquor, to tall oil and other fatty or resinous acid byproducts from soft woods. Engineered Valves offers products that are up to the challenges of tough recovery applications.

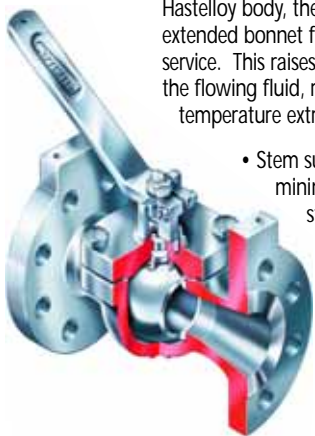


## Cam-Tite Hastelloy C

Applications: tall oil, other applications involving fatty or resinous acids from soft wood

Featuring a tough-duty, corrosion resistant Hastelloy body, the Cam-Tite features an extended bonnet for higher temperature service. This raises the stem seat further from the flowing fluid, reducing the effects of temperature extremes.

- Stem support minimizes galling and stem leakage
- Corrosion resistant ceramic ball is impervious to gases

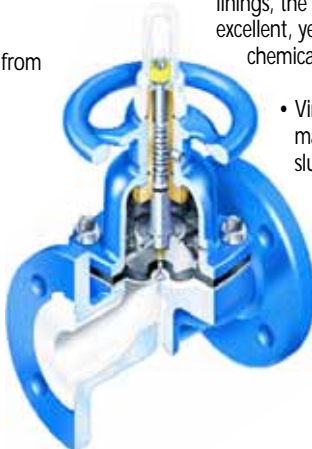


## Dia-Flo Weir Diaphragm Valve

Applications: causticizers

Offering corrosion resistant coatings and diaphragms, plus a wide range of linings, the Dia-Flo valves provide an excellent, yet economical, barrier to chemical attack and corrosion.

- Virtual absence of cavities makes it the ideal valve for slurry applications
- Bubble tight shut-off down to 0.1 microns
- All working parts are isolated from the process fluid



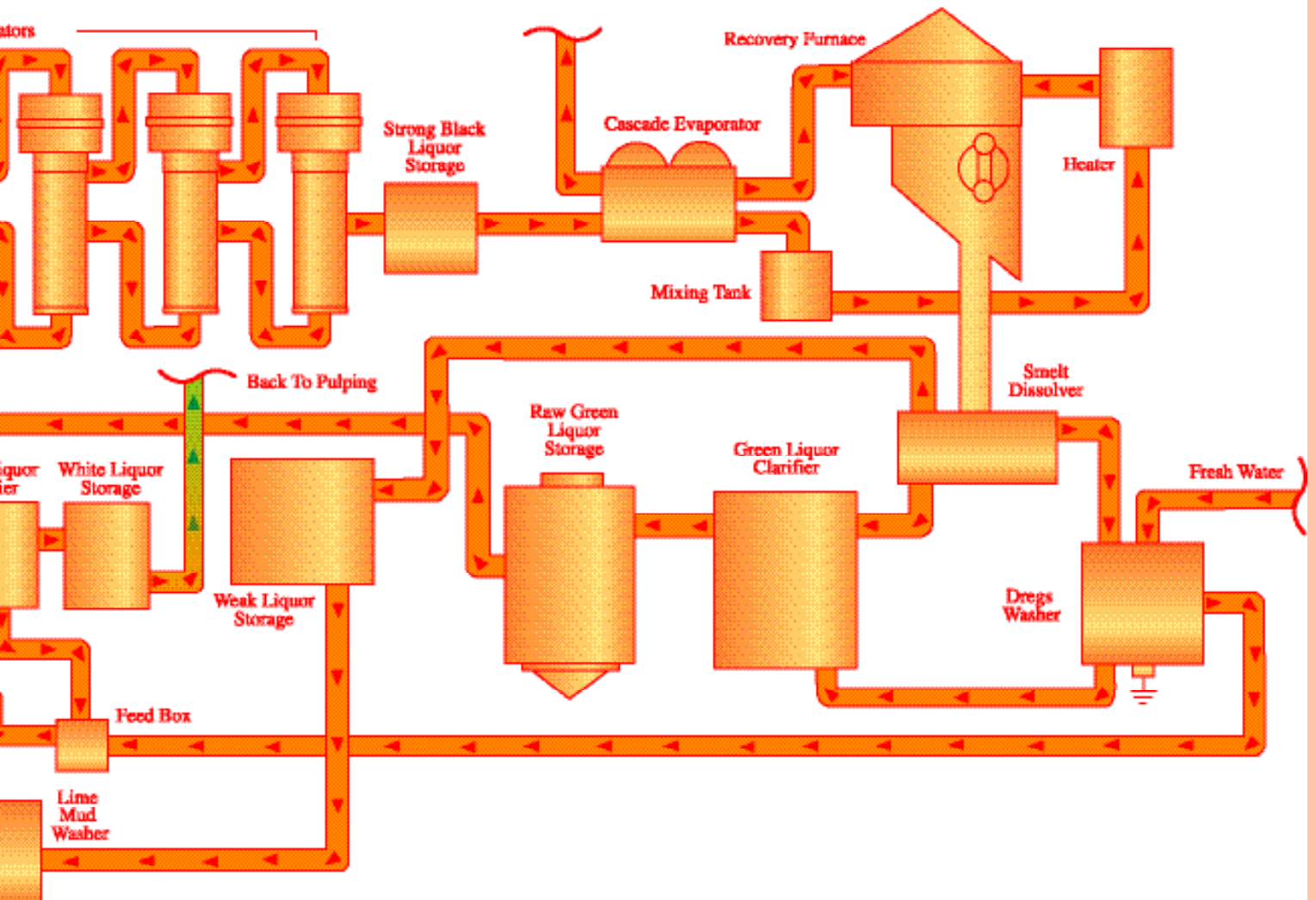
## Fabri-Valve C133GL

Applications: Green and white liquor, lime mud, causticizers – processing and storage

We engineered the C133GL to handle the most difficult recovery applications. This valve utilizes a high profile nickel/TFE gate coating and AFLAS seats to combat the corrosion, abrasion, and scale build-up inherent to these services.

- Compatible with the Fabri-Valve Scalebreaker actuator
- Valve does not discharge to atmosphere if seat fails
- Lower bonnet provides for multiple containment options



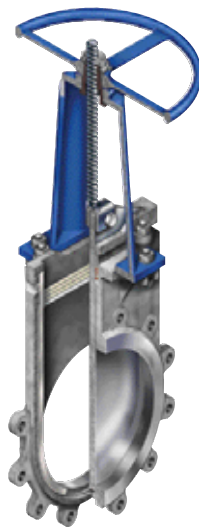


**Fabri-Valve Scalebreaker**

Applications: Green liquor, white liquor, lime mud, and milk of lime

When used with the Fabri-Valve C133GL, the patented Scalebreaker actuation system breaks thick scale that can interfere with the operation of other valves. This unique, duplex actuator fractures the scale around the full 360 degrees of the seat.

- Pneumatic or hydraulic
- Programmable from DCS or by using the Fabri-Valve control package

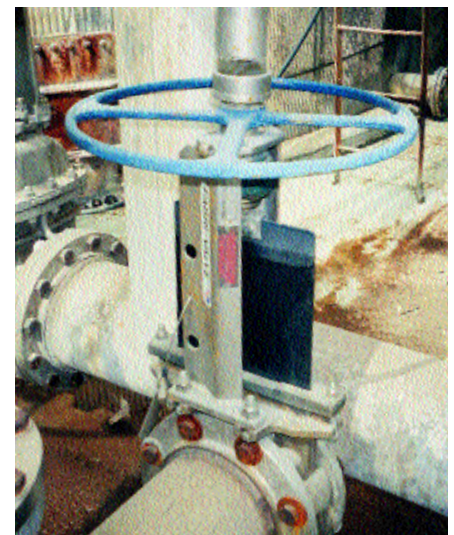


**C67CL Bi-directional Knife Gate Valve with Chest Liners**

Applications: Lime Mud, Concentrated Black Liquor

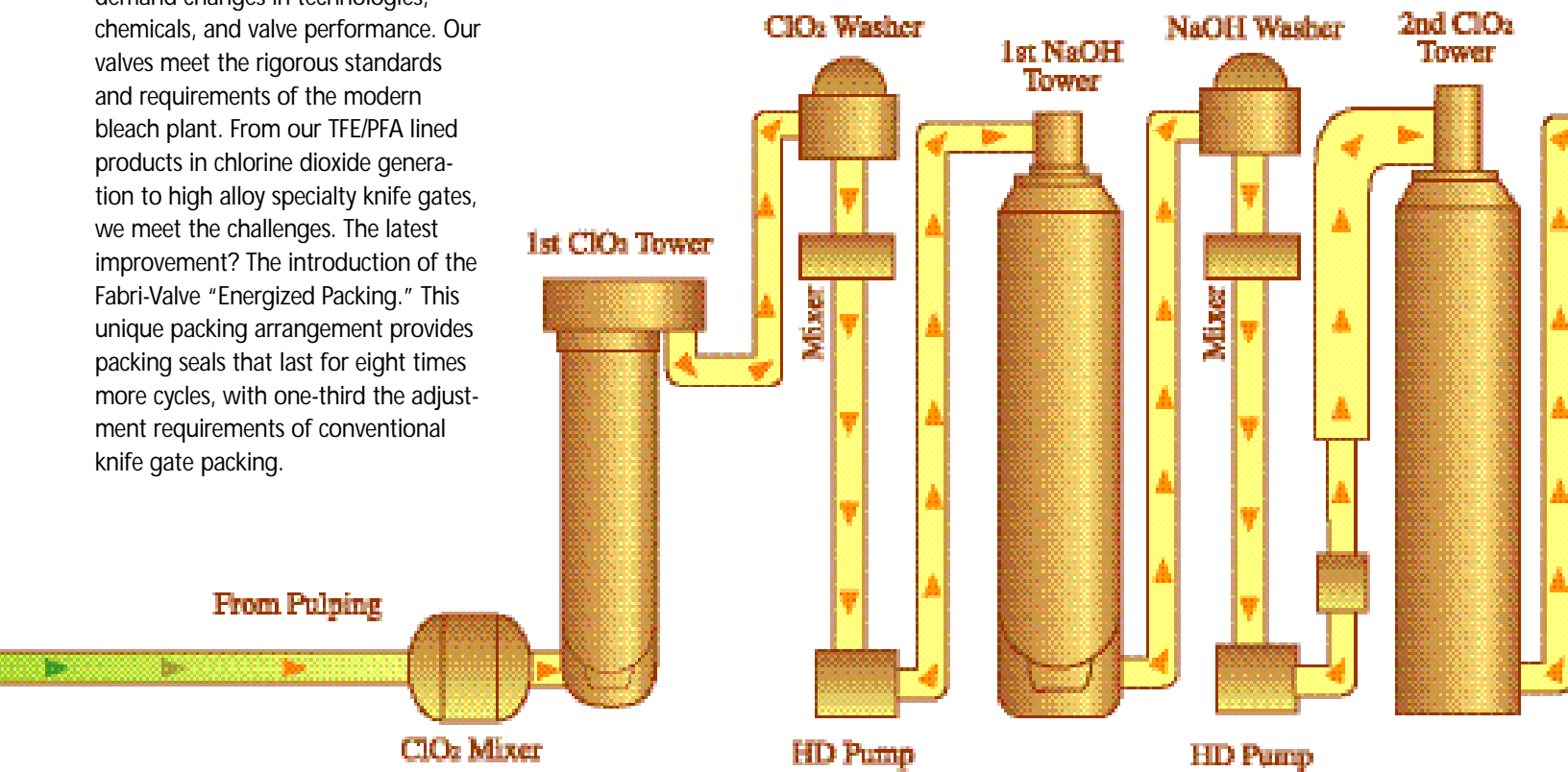
The C67 is capable of handling the thick slurries found in the recovery area when carbon filled TFE chest liners are added to the valve. Chest liners prevent build-up of media in the area above the port, allowing the valve to be used on much higher concentrations of media.

- Prevent de-watered material from collecting in chest



# Bleaching

The bleach process has seen dramatic changes over the last several years. The EPA's "Cluster Rules" demand changes in technologies, chemicals, and valve performance. Our valves meet the rigorous standards and requirements of the modern bleach plant. From our TFE/PFA lined products in chlorine dioxide generation to high alloy specialty knife gates, we meet the challenges. The latest improvement? The introduction of the Fabri-Valve "Energized Packing." This unique packing arrangement provides packing seals that last for eight times more cycles, with one-third the adjustment requirements of conventional knife gate packing.

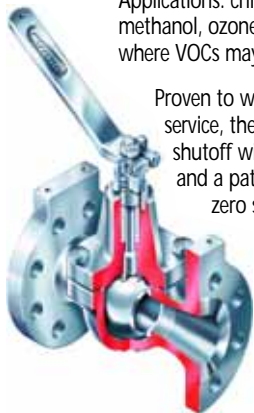


## Cam-Tite Carbon Steel ST3-SL4-CLV

Applications: chlorine gas containment, methanol, ozone and oxygen applications where VOCs may be explosive

Proven to withstand harsh chlorine service, the Cam-Tite offers absolute shutoff with no stem seal leakage, and a patented ball design for zero seat leakage.

- A positive vent in valve body provides safety relief
- Fire safe RTFE seat
- Graphite stem seal and gasket.

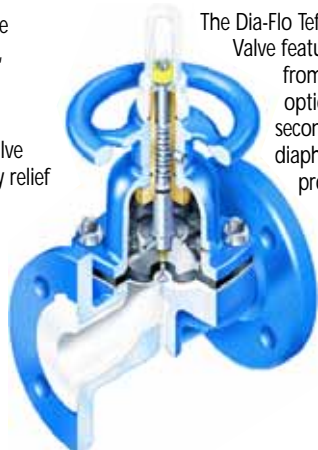


## Dia-Flo 2529-TM Diaphragm Valve

Applications: chlorine gas containment, extraction, hypochlorite, sulfuric acid, sodium chlorate with solids, ozone and oxygen applications where VOCs may be explosive, and sulfur dioxide

The Dia-Flo Tefzel-lined Weir Diaphragm Valve features bubble tight shut-off from 0.1 micron to 200 psi. An optional sealed bonnet offers secondary containment in case of diaphragm failure, preventing the process media from entering the atmosphere.

- Resistant to chemical attack and corrosion
- Adjustable travel stop
- Protective stem cap



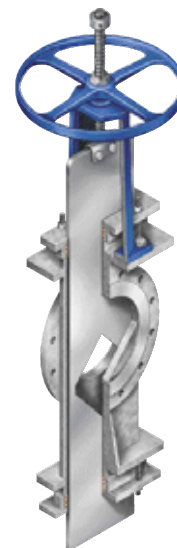
## Fabri-Valve F39

### Fabricated Slide Gate Valve

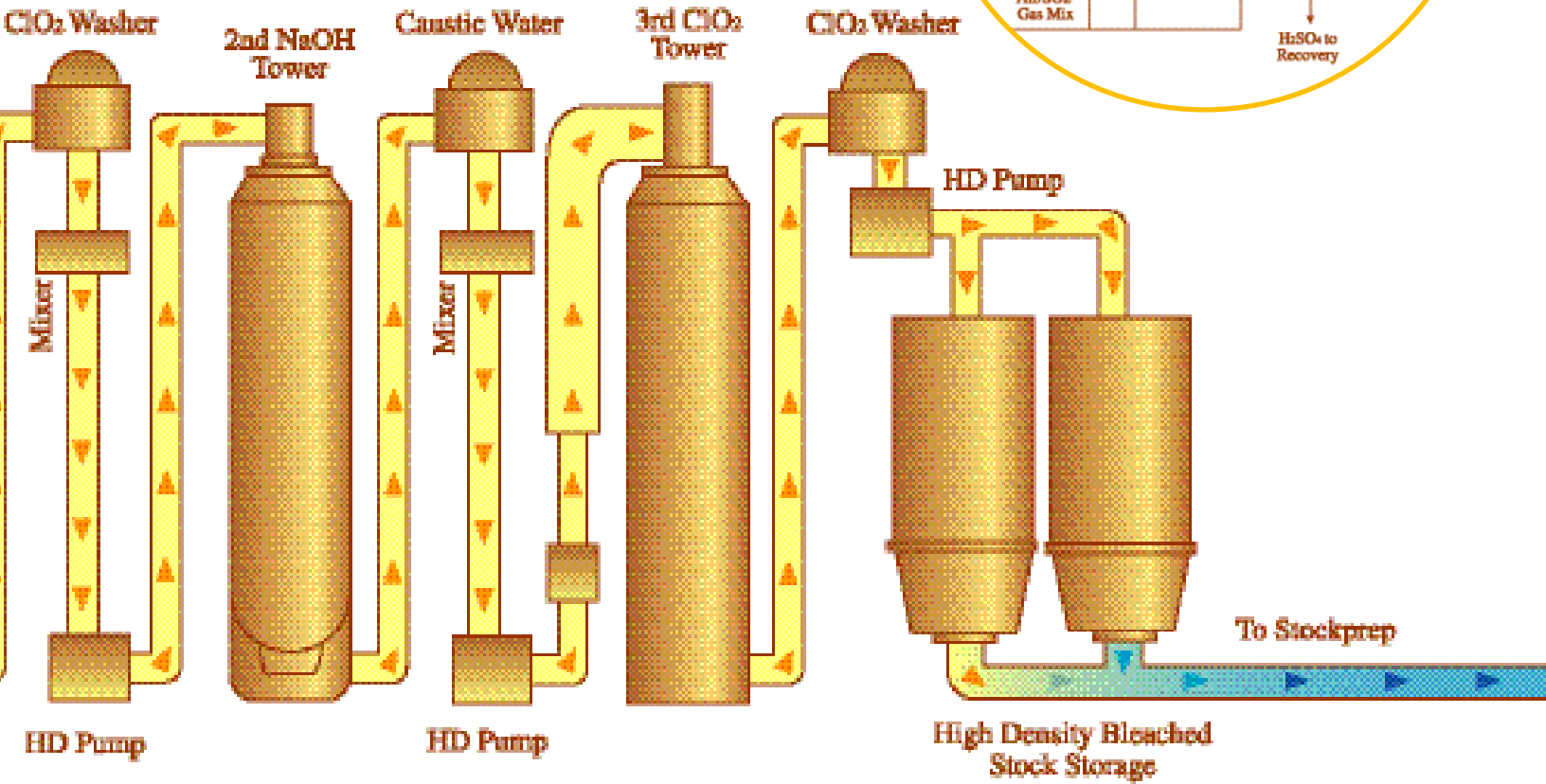
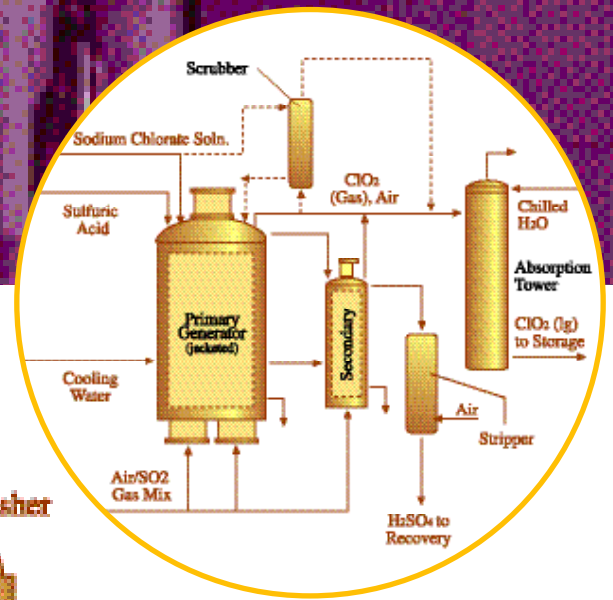
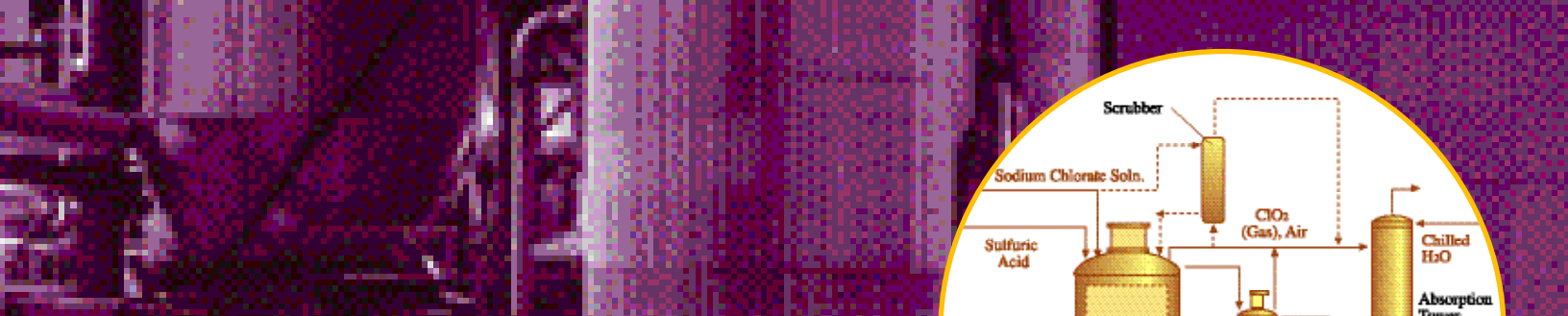
Applications: isolation of pumps and equipment, high density storage, and tower isolation

Fabricated versatility provides the ability to use the best material for each application. The F39 can be built in Hastelloy or Titanium for positive closure on the severe corrosives found in bleach plant applications.

- Optional flush and cleanout ports allow wash-out of de-watered stock
- Replaceable seats for positive shut-off
- Diamond port for throttling







**Richter NK Butterfly Valve**

Applications: chlorine gas containment, chlorine dioxide bleaching, bleach plant stock lines

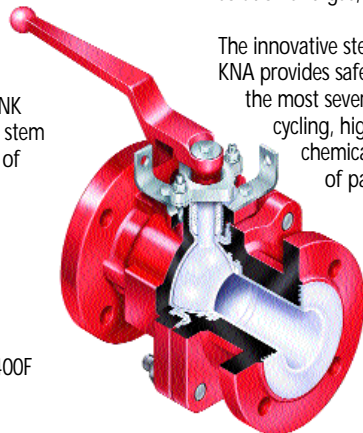


A tough, PTFE-lined valve, the NK Butterfly offers a self-adjusting stem seal that remains tight in spite of frequent switching cycles and temperature fluctuations.

- Highly corrosion resistant
- Lug or wafer design
- Temperatures from -75F to 400F
- Pressures to 145 psi

**Richter KNA 1100 Ball Valve**

Applications: chlorine gas containment, chlorine dioxide bleaching, chlorine dioxide solution and gas, waste liquor from generator



The innovative stem seal design of the Richter KNA provides safe, assured operation in the most severe conditions of thermal cycling, high pressures and corrosive chemicals where stem sealing is of paramount importance.

- Permanent body flange sealing
- Full flow capabilities
- ANSI Class 150 design
- Suitable for installation in virtually any type of piping

**Fabri-Valve C67**

Applications: bleach stock lines, tower, equipment and pump isolation



Performance with an intense emphasis on rigorous standards. That's what you'll achieve with the proven bubble-tight, bi-directional action of the C67. Fabri-Valves' "Energized Packing" provides sealing performance well beyond traditional knife gate valves.

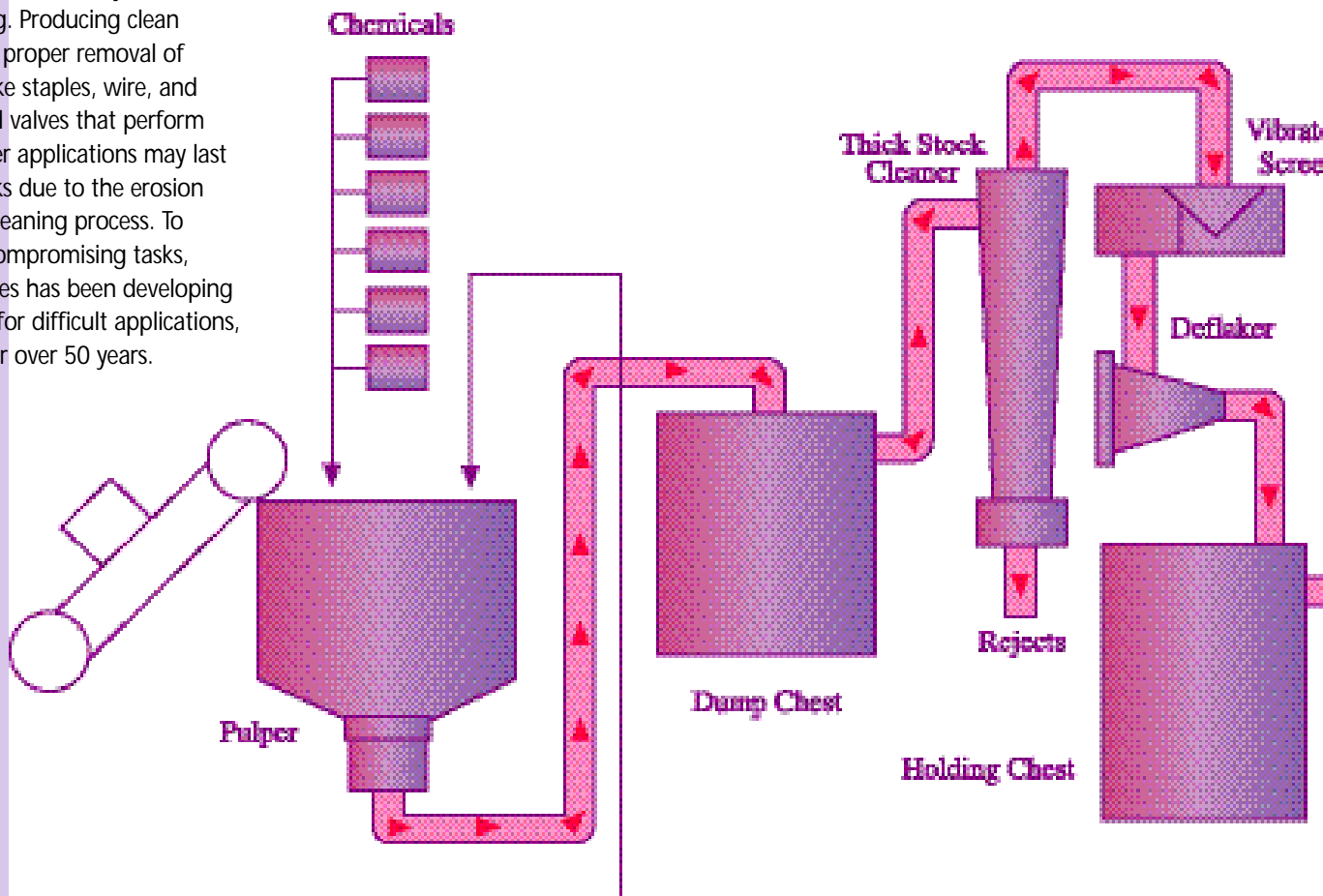
It's the ideal valve for bleached stock lines throughout your bleach plant.

- Optional AFLAS seats for corrosive areas
- Optional White Viton seats
- Available in 317L, 254 SMO, and other high alloys

# Recycling



It's one of the most difficult valve applications in the paper industry – the production of secondary fiber for papermaking. Producing clean fiber means the proper removal of contaminants like staples, wire, and other trash. And valves that perform for years in other applications may last only a few weeks due to the erosion created in the cleaning process. To meet these uncompromising tasks, Engineered Valves has been developing specialty valves for difficult applications, like recycling, for over 50 years.

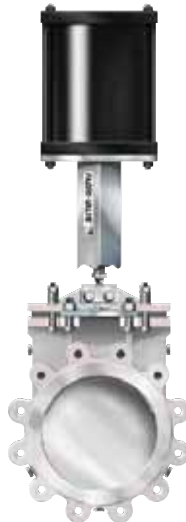


## Fabri-Valve C37/R/S Knife Gate Valve

Applications: stock lines, equipment and pump isolation, and filtrate

The Fabri-Valve C37 is the workhorse of the pulp mill. This valve meets or exceeds the MSS and TAPPI standards for knife gate valves. Plus, the open seat area on the C37 allows for use in higher consistency stock where other manufacturer's knife gate valves fall short.

- Metal, D-Ring, or replaceable seat options
- All stainless steel or stainless body with carbon/ductile topworks
- Backing rings for reverse flow applications



## Fabri-Valve C42 Recycle/Reject Valve

Applications: Cleaners, rejects, scavengers, and screens

Proven to offer up to 5 years of dependable service versus the few weeks offered by other recycle/reject valves. Staple and wire compacting is eliminated in the open bore body.

- Stellite face and bore, easily replaceable seat
- Hard alloy gate
- Flush ports standard
- Optional square flange adapter

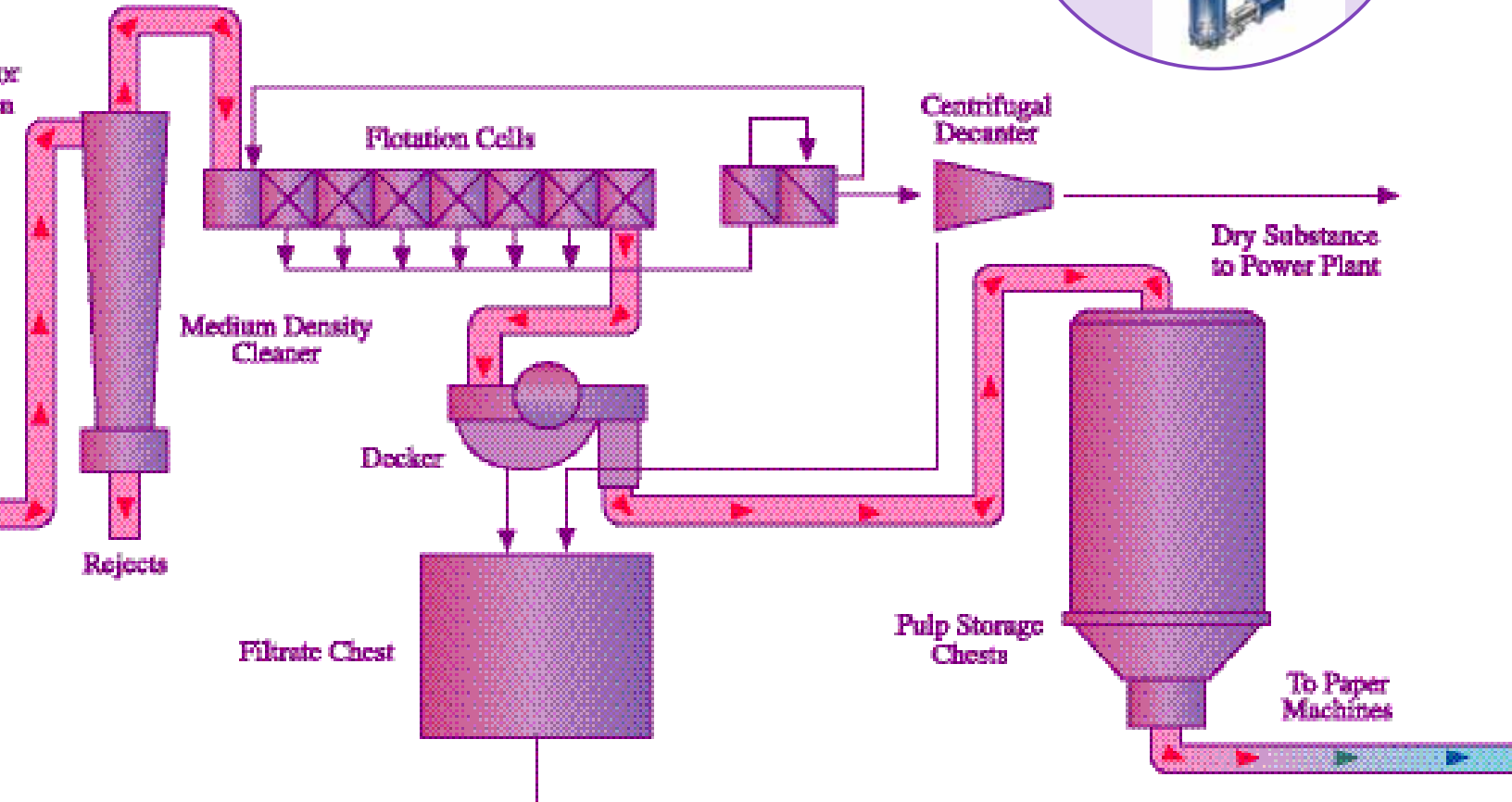


## Fabri-Valve F39 Fabricated Slide Gate Valve

Applications: rejects, and isolation of pumps, equipment, and vessels

The Fabri-Valve F39 can be provided with hardened materials or an overlay of Stellite to provide abrasion protection on difficult applications in the recycle mill.

- Optional flush and cleanout ports allow wash-out of rejects or de-watered stock
- Stellite overlay of integral or replacement

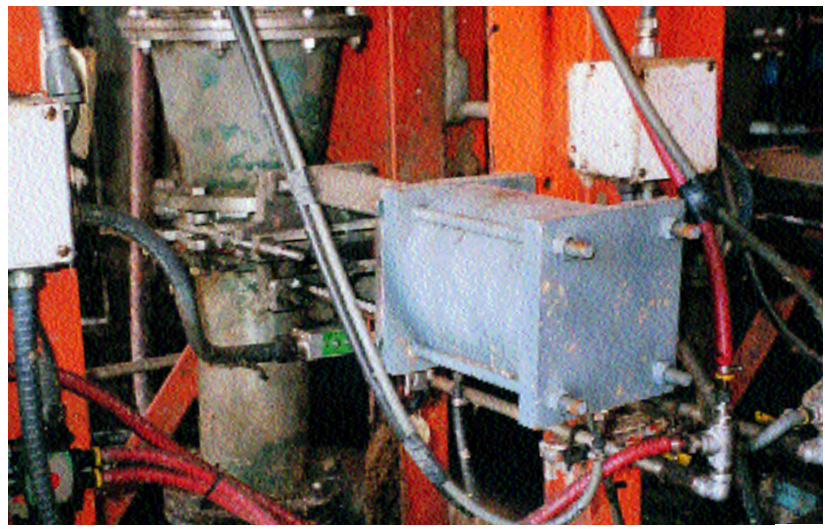
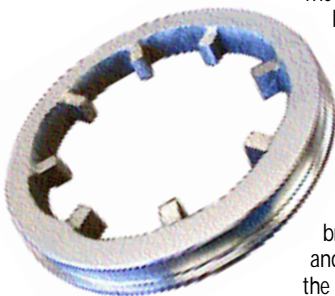


**Recycling Vortex Breaker**

Applications: rejects separators

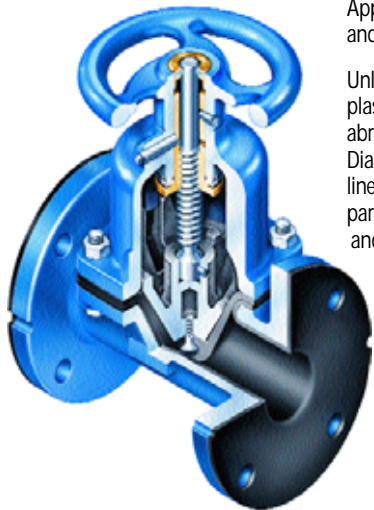
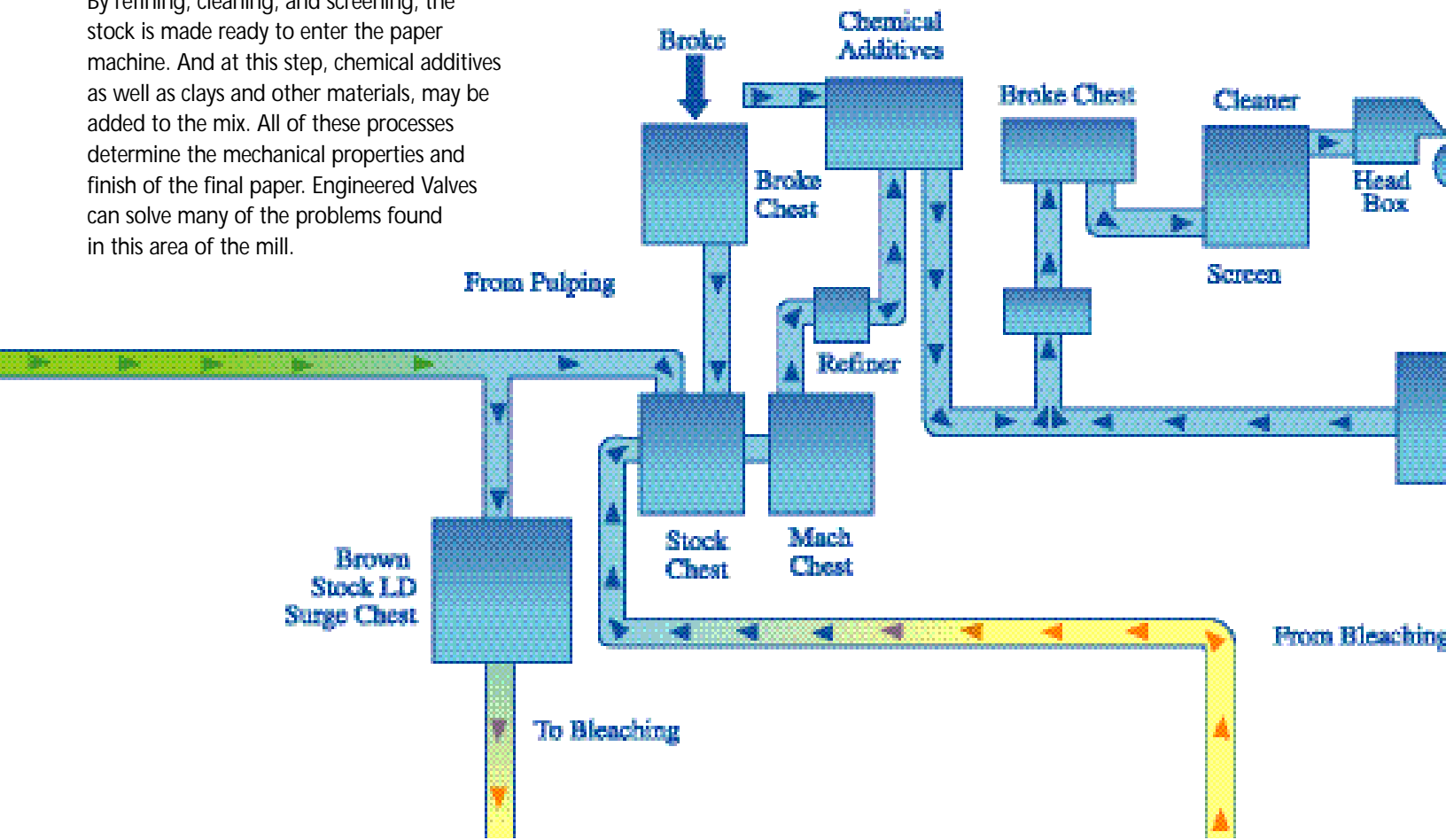
The Vortex Breaker is an extended-life component designed to stop the centrifugal force created by the vortex that moves rejects, trash and contaminants to the outside wall of the cleaner. After contaminants are spun into the valves, the Vortex Breaker breaks this centrifugal motion and allows the rejects to fall into the dirt trap.

- Stellite overlay



# Stockprep & Papermaking

This is the stage that strongly influences the quality of the paper you produce – preparing the pulp to be made into paper. By refining, cleaning, and screening, the stock is made ready to enter the paper machine. And at this step, chemical additives as well as clays and other materials, may be added to the mix. All of these processes determine the mechanical properties and finish of the final paper. Engineered Valves can solve many of the problems found in this area of the mill.

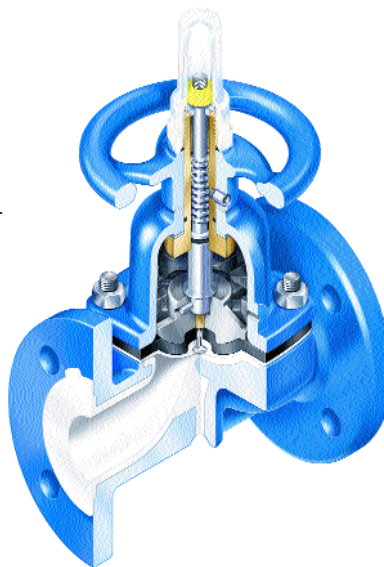


## Dia-Flo Straightway Valves

Applications: kaolin, titanium dioxide and PCC

Unlined or lined (soft rubber, neoprene, plastic) Designed specifically for slurry, abrasive and corrosive applications, Dia-Flo Straightway Valves offer a streamlined fluid passage which prevents particles from becoming entrapped and obstructing valve operation.

- Available lined or unlined
- Bonnet parts are completely isolated
- Bubble tight shut-off

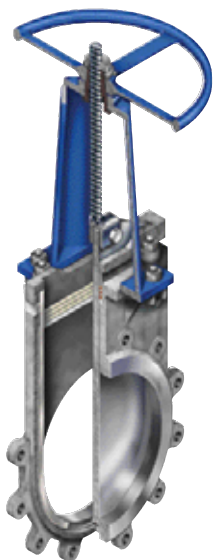
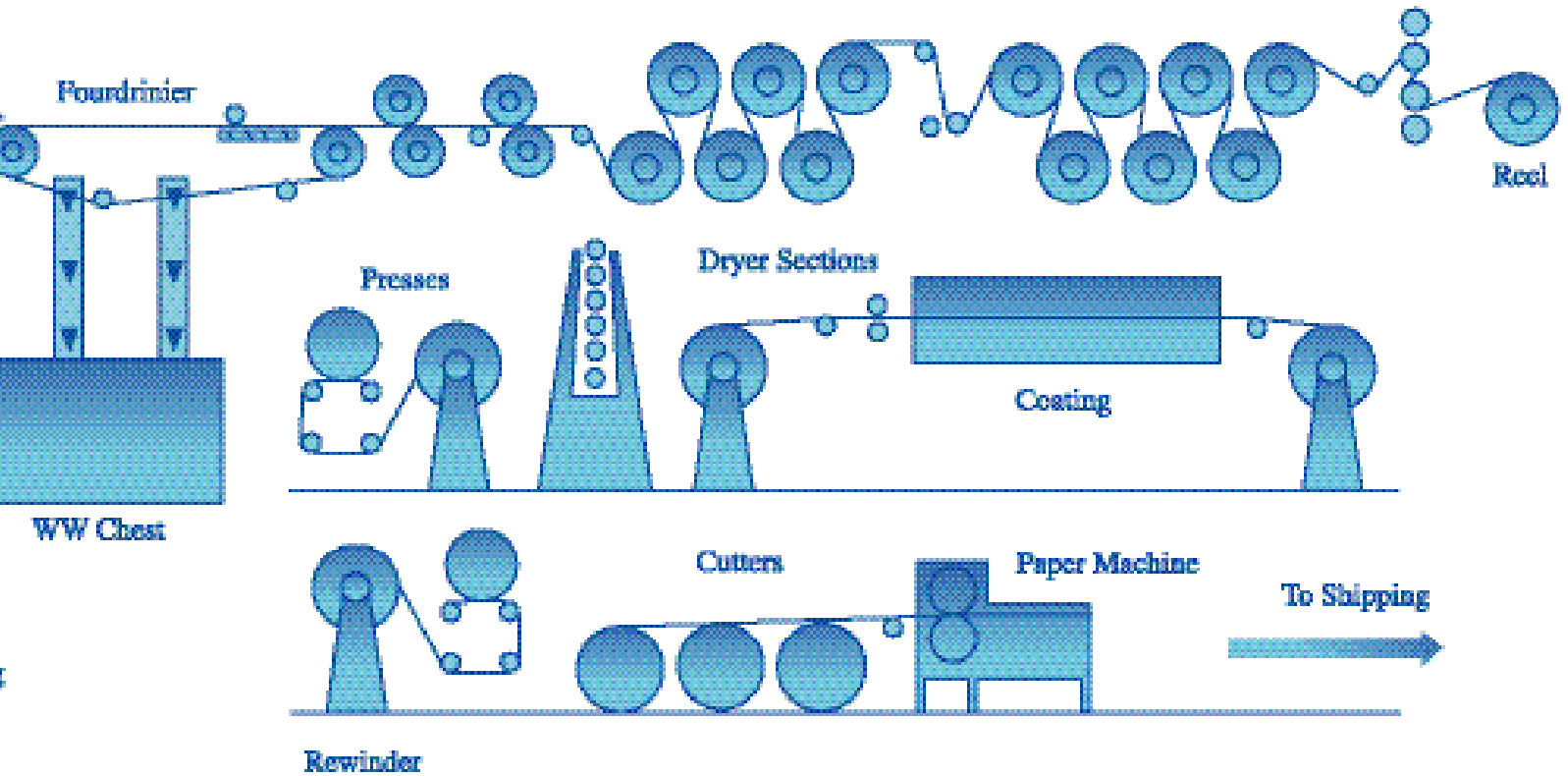
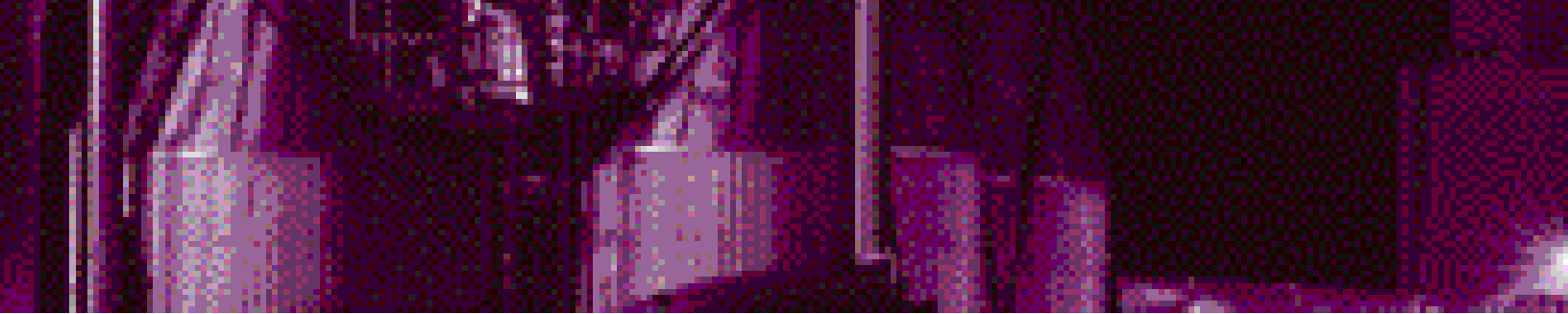


## Dia-Flo Weir Valves

Applications: titanium dioxide, varnish, starch, alum, and sizing

Offering an economical solution for tough slurry applications containing 15% or less solids, Dia-Flo Weir Valves provide a long list of unique, life extending features.

- Bubble tight shut-off
- Streamlined flow path
- Broad selection of linings and diaphragm materials
- Bonnet parts are completely isolated



**Fabri-Valve C67**

Applications: Stock, refiners, screens, and white water

The C67 provides bubble-tight, bi-directional, shut-off and the most dependable packing design in the industry with our "Energized Packing". These performance characteristics provide the Stockprep/Papermaking area with a cleaner, safer workplace.

- White seat materials to prevent black marks on dryer rollers
- No cavities to fill with de-watered refined stock
- Bubble-tight shut-off prevents problems with dewatered plugs at screens



# Technical Data

*Engineered Valves Group is a proven supplier of quality valve products designed specifically for the pulp and paper industry. We design and engineer products and features that are always uniquely adapted to your pulp and paper processing requirements.*

## Fabri-Valve®

Located in Amory, Mississippi, the ITT Industries Fabri-Valve manufacturing plant produces a wide range of knife gate valves and specialty valves for the pulp and paper industry. At Engineered Valves Group, every valve is assembled, tested, and checked for quality. Certified in over 100 weld procedures, ITT builds both cast and fabricated valves.

In 2000, we introduced "Energized Packing" to the knife gate valve market. This unique process utilizes an unrivaled resilient cored packing to provide memory. This packing process results in greater cycle life, with fewer adjustments. "Energized Packing" is standard on all Fabri-Valve knife gate valves.

These valves meet the MSS-SP81 and TAPPI 405-8 standards. Knife gate valves are built to 150 cold working pressure as standard. And Engineered Valves Group has the capability to fabricate valves to much higher pressures if the job requires it.

## Fabri-Valves:

**C37** – 2"-24" Cast body, uni-directional, metal-seated knife gate valve. 304, 316, and 317L stainless as standard. Available in stainless steel or mild steel yokes. Options include D-ring seat for bubble-tight shut-off, replaceable resilient seat for bubble-tight shut-off and easy replacement, V-port for throttling, flush ports, and backing ring for reverse pressure.

**C67R/S** – 2"-36" Cast body, bubble-tight, bi-directional, resilient seated, knife gate valve. 304, 316, and 317L stainless as standard. Black or white EPDM, black or white Viton, and AFLAS are the most popular seat materials. Available in stainless steel or mild steel yokes. Options include chest liners for high solids and V-port for throttling.

**C42S** – 2"-24" Cast body, rejects/cleaner, knife gate valve. 316 stainless steel body, Stellite overlaid face and bore seat, hardened gate, flush ports, and standard oversized cylinders.

**C133GL** – 2"-24" Cast body valve for bubble-tight, bi-directional shut-off on green or white liquor and lime mud applications. 316 stainless steel body, nickel/TFE coated gate, AFLAS seats.

**F39R/S** – 2"-48" Fabricated slide gate valve for difficult slurries and dry solids applications. Fabricated versatility provides the ability to modify the valve to handle many difficult applications.

**C132R/S** – 3" Cast body transmitter isolation valve, metal or D-ring seat, flush mount tank flange, ratchet operator.

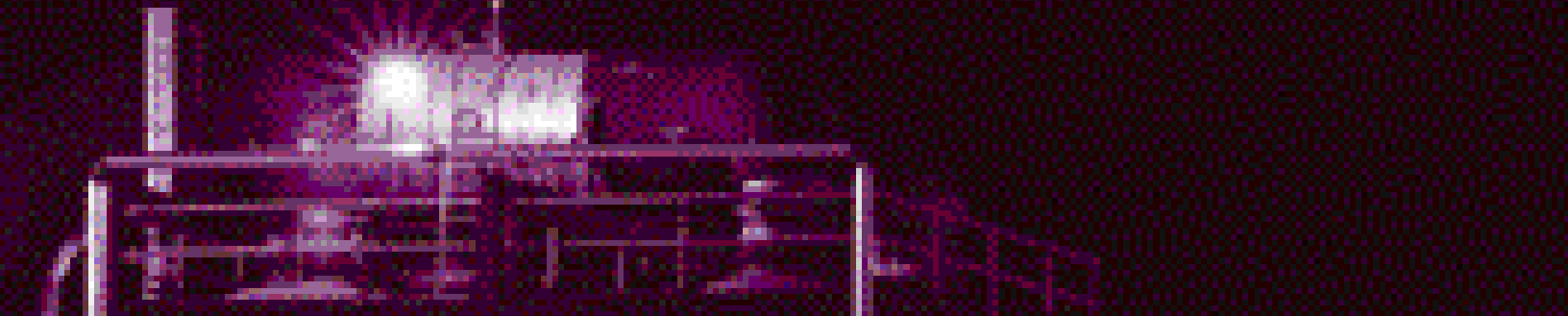
## Dia-Flo®

At our manufacturing plant in Lancaster, Pennsylvania, we build Dia-Flo straightway and weir diaphragm valves. These valves provide bubble-tight shut-off for clear liquids and slurries, bonnet isolation from media, and streamlined flow path. The Dual Range bonnet utilized on Dia-Flo weir valves provides for both control and bubble-tight shut-off in a single valve. In the pulp and paper industry, Dia-Flo diaphragm valves are used in aggressive solids, severe corrosives, and for demineralized water applications. Dia-Flo valves are rated up to 200 psi. Both straightway and weir valves are available with a wide variety of actuation options.

## Dia-Flo Valves:

**Dia-Flo Weir Valves** – 1/2" -12" Unlined body materials include bronze, cast iron, ductile iron, cast steel, 316 stainless steel, and Alloy 20 CN7M. Cast iron or ductile iron bodies are lined with neoprene, glass, soft and hard rubber, butyl, hypalon, Tefzel, PVC, Polypropylene, PFA, and PVDF. Diaphragm choices include butyl, hypalon, EPDM, BUNA-N, natural rubber, neoprene, Viton, and PTFE with backing cushion.

**Dia-Flo Straightway Valves** – 1/2"-12" Unlined body materials include cast and ductile iron, 316 stainless steel, and cast steel. Liner materials include Tefzel, neoprene, glass, soft and hard rubber, hypalon, butyl, and polypropylene. Diaphragm choices include butyl, natural rubber, neoprene, EPDM, hypalon, and BUNA-N.



## Cam-Tite®

Cam-Tite top entry ball valves are used in diverse, uncompromising severe service applications for shut-off of corrosive or lethal liquids and gases. The Cam-Tite utilizes a unique geometry ball, to cam the ball into the seat – providing positive shut-off regardless of line pressure. ANSI class 150, 300, and 600 valves are available in flanged, buttweld, socketweld, and threaded designs. Cam-Tite top entry ball valves are also produced in our Lancaster, Pennsylvania plant.

**Cam-Tite Ball Valves** – 1/2"-6" Body material choices include WCB, LCB, LC-1, 304 and 316 stainless steel, Alloy 20, Monel, Hastelloy C, Nickel, Titanium, and Inconel. Ball choices include 316 stainless steel, Monel, Hastelloy C, Inconel, ceramic, nickel, and titanium. Seat materials include RTFE, PTFE, UHMW-P, PEEK, EPDM, and carbon filled PTFE. The Cam-Tite is available with a variety of cover choices including standard, extended, severe service with and without lantern ring, and bellows sealed.

## Richter™

Richter lined ball valves and butterfly valves are manufactured in Germany with necessary assembly and modifications performed in our Lancaster, Pennsylvania plant. Richter valves are lined for use in corrosive applications and are ANSI 150 dimensions and pressure class rated. All Richter valves are epoxy coated, with stainless steel hardware as standard.

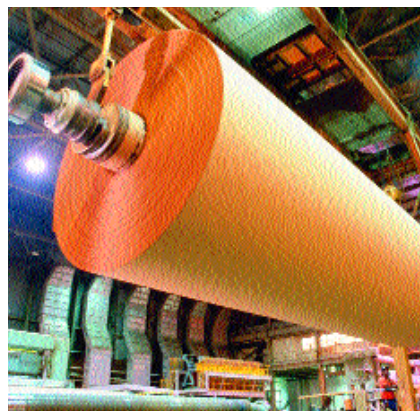
### Richter Valves:

**BV Ball Valves** – 1"-8" PFA lined standard port ball valves. Ball choices include PFA lined, and oxide ceramic with PFA lined stem. Options include locking device, vented ball, and anti-static lining.

**KNA Ball Valves** – 1/2"-6" PFA lined full port ball valves. Ball choices include PFA lined, and oxide ceramic with PFA lined stem. Options include double packing, double packing with monitoring port, locking device, vented ball, and anti-static lining. Also available with V-port configured ball for control applications.

**NK Butterfly Valves** – 2"-16" wafer or lug pattern PTFE lined butterfly valves with PFA lined disc. Available options include safety stuffing box, safety stuffing box with leak detection port, and anti-static lining.

**Other Richter lined products** – PSG sight glasses, BC ball check valves, SR/SRV sight glass/ball check combination valve, GSO pipe strainers, and KSE relief valves.



For additional product information on the products as referenced,  
call 1-800-2ITT-FTC, (1-800-248-8382)  
or contact Engineered Valves Headquarters (1-800-366-1111),  
or visit us on the web at [www.engvalves.com](http://www.engvalves.com)



**RICHTER®**  
*Lined Valves For  
Corrosive Applications*



**DIA-FLO®**  
*Diaphragm Valves*



**CAM-TITE®**  
*Metal Ball Valves*



**FABRI-VALVE®**  
*Knife Gate and Special  
Fabricated Valves*



**SKOTCH®**  
*Burner Shut-Off Valves*



**DIA-FLO®**  
*Demineralizer Brochure*

## Engineered Valves Group

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